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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/699,845

11/04/2003

Sung-Su Jung

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EXAMINER

LIN, JAMES

ART UNIT

PAPER NUMBER

1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/17/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/699,845

Applicant(s)

JUNG ET AL.

Examiner

Jimmy Lin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/19/03, 10/4/06, 1/3/07.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II, claims 8-14 in the reply filed on 1/22/2007 is acknowledged.
2. Claims 1-7 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 1/22/2007.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 8-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto et al. (U.S. Publication No. 2001/0013920) in view of Applicant's admitted prior art (hereafter, AAPA) and Kawabe et al. (JP 64-059823, one of Applicant's cited references).

Hashimoto teaches a method of making a liquid crystal display (LCD) (abstract). A sealant can be formed on the substrate through a dispenser method [0046].

Hashimoto does not explicitly teach that the dispenser method for the sealant can be performed using a syringe. However, Hashimoto does teach that a liquid crystal composition can

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be injected onto a substrate through a nozzle of a syringe 42 [0050]. An air pressure source 44 supplies air into the syringe and a controller 43 controls the air pressure source to regulate the volume of the liquid crystal composition to be discharged ([0109]; Fig. 14). It would have been obvious to one of ordinary skill in the art at the time of invention to have dispensed the sealant using the syringe that dispenses the liquid crystal with a reasonable expectation of success because Hashimoto teaches that such a syringe is an operable dispenser for depositing onto an LCD substrate. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Repeated dispensings of the sealant through the syringe by supplying intermediate flow amounts of gas to the syringe would be performed when the syringe is dispensing onto subsequent substrates. The transition to the subsequent substrates would necessarily require intermediate flow amounts of gas.

Hashimoto does not explicitly teach detecting a first flow amount of gas and determining a second flow amount of gas based upon the first flow amount of gas and the volume of the syringe.

AAPA teaches a need to detect the residual quantity of sealant that remains in a syringe when forming a seal pattern on a substrate. An operator detects an initial charge quantity of the sealant filled in the syringe and calculates a consumed quantity of sealant by calculating a length of the seal pattern during its formation to thereby estimate a residual quantity of the remaining sealant. If the syringe does not have enough sealant, the seal pattern will only be partially formed or not formed at all, causing a defective LCD panel and a decrease in productivity (paragraph [0015] of Applicant's specification). Kawabe teaches a method of accurately detecting the residual material 13 in a syringe 11. A pressure gauge is installed in the syringe to detect the pressure of the head space. The residual amount can be detected by measuring the time required to reach a predetermined pressure when feeding gas into the syringe (abstract; Fig. 1). It would have been obvious to one of ordinary skill in the art at the time of invention to have used the residual-detecting technique of Kawabe in the process of forming a sealant of Hashimoto because Kawabe teaches that such a residual-detecting method is operable for use in syringes. One would have been motivated to do so in order to accurately detect if the residual

amount of sealant would form a complete seal pattern, thereby avoiding the manufacture of a defective LCD panel.

In view of these teachings, a first flow amount of gas is measured to calculate the residual sealant in the syringe. If the residual sealant is determined to be sufficient for additional formation of seal patterns, a second flow amount of gas is used to form the additional seal patterns.

The mere requirement of “comparing” does not add any patentable weight to the claims.

Claims 9-10: Hashimoto, AAPA, and Kawabe do not explicitly teach wherein comparing a sum of intermediate flow amounts with the second flow amount of gas to determine a residual quantity of the sealant remaining in the syringe includes dividing the second flow amount of gas equally into N parts corresponding to the number of dispensings in the syringe, nor do they explicitly teach determining how many N dispensings remain in the syringe.

However, the residual sealant that is calculated using the first flow amount of gas can determine the number of seal patterns that can be sufficiently formed because AAPA teaches that it is well known for an operator to calculate the necessary sealant to form a single seal pattern. The calculated number of remaining seal pattern formations directly correlates with the flow amount of gas (i.e., the second flow amount of gas) required to discharge the residual sealant. Thus, one of ordinary skill in the art would have been able to determine the amount of sealant required to form a single seal pattern and would have thereby been able to calculate the number of patterns that could have been formed using the residual sealant. Based on this knowledge, dividing the second flow amount of gas equally into N parts corresponding to the number of dispensings in the syringe and determining how many N dispensings remain in the syringe, as required by the claim, require simple algebra and, thus, are obvious modifications to one of ordinary skill in the art.

Claim 11: The dispensing material is a sealant, as discussed above.

Claim 12: Hashimoto teaches that liquid crystal can be dispensed from the syringe, as discussed above, but the combination of references do not explicitly suggest the use of the residual-detecting technique of Kawabe. However, one of ordinary skill in the art would have recognized that an insufficient amount of liquid crystal dispensed on the substrate would have created a defective LCD panel. Therefore, it would have been obvious to one of ordinary skill in

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the art at the time of invention to have used the residual-detecting technique in the dispensing of liquid crystal. One would have been motivated to do so in order to have avoided the manufacture of a defective LCD panel.

Claim 14: Hashimoto, AAPA, and Kawabe do not explicitly teach wherein determining a second flow amount of gas based upon the first flow amount of gas and the volume of the syringe is also based upon maintaining a minimum quantity of residual dispensing material that is enough to ensure a previous dispensing but not enough for a subsequent dispensing.

However, one of ordinary skill in the art would have been able to calculate the amount of material required for a single dispensing, as discussed above. Ensuring that the residual amount was enough for a previous dispensing but not enough for a subsequent dispensing would have required simple algebra and, thus, would have been an obvious modification to one of ordinary skill in the art.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto '920 in view of AAPA and Kawabe '823 as applied to claim 8 above, and further in view of Hashimoto et al. (U.S. Publication No. 2003/0083203).

Hashimoto '920, AAPA, and Kawabe are discussed above, but do not explicitly teach that the dispensing material can be silver. However, Hashimoto '203 teaches that conductive fine particles, such as silver, can be dropped onto an LCD substrate from a nozzle [0102]-[0104], wherein the silver is dropped in the form of dots at the outer edges of the image display to prevent breaks and short circuits ([0191]-[0195]); Fig. 8). Hashimoto '920 teaches that materials can be deposited onto an LCD substrate by dropping the material through a nozzle of a syringe. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have connected the upper and lower substrates of Hashimoto '920 using the silver dots of Hashimoto '203 in order to have prevented breaks and short circuits. In addition, it would have been obvious to one of ordinary skill in the art at the time of invention to have dropped the silver dots onto the LCD substrate using the syringe of Hashimoto '920 because Hashimoto '920 teaches that such syringes have nozzles that are suitable for dropping material onto LCD substrates. The selection of something based on its known suitability for its intended use has

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been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

The combination of references does not suggest using the residual-detecting technique of Kawabe in the process of dispensing silver. However, such a modification is obvious for substantially the same reasons as discussed for claim 12 above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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KEITH HENDRICKS
PRIMARY EXAMINER